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*Indian Standard*  
SPECIFICATION FOR  
EDIBLE FISH POWDER

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# Indian Standard

## SPECIFICATION FOR EDIBLE FISH POWDER

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(Continued on page 2)

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( Continued on page 9 )

# *Indian Standard*

## SPECIFICATION FOR EDIBLE FISH POWDER

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 31 December 1981, after the draft finalized by the Nutrition Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Fish is a potential source of food. The exploration along the vast coastline will further augment its supplies to meet internal demand for edible fish, leaving some surplus also. The use of surplus fish can well be used for production of fish powders of edible quality.

**0.3** Edible fish powder is prepared for human consumption by a hygienic process that does not involve solvent extraction. Edible fish powder contains all the nutritional ingredients like protein, vitamins and minerals, and has the organoleptic qualities, like taste and flavour, of dry fish. It is completely free from toxic organic solvents and added chemicals.

**0.4** Being an animal protein, the quality of fish protein is high and the lysine level is particularly good. Its use even in small quantities would serve to boost the protein quality of cereal-based diets wherever feasible. Use could also be thought of in the formulation of convalescent and formulated foods, either by food manufacturers or in the home.

**0.5** A recommended method for the preparation of edible fish powder is given in Appendix A.

**0.6** In the preparation of this standard, due consideration has been given to the relevant Rules prescribed by the Government of India under the Prevention of Food Adulteration Act, 1954 and the Standards of Weights and Measures (Packaged Commodities) Rules, 1977. The standard is, however, subject to the restrictions imposed under these wherever applicable.

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960\*. The number of significant places

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\*Rules for rounding off numerical values (*revised*).

retained in the rounded off value should be the same as that of the specified value in this standard.

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## 1. SCOPE

**1.1** This standard prescribes requirements and methods of sampling and test for edible fish powder.

## 2. RAW MATERIAL

**2.1** Fresh fish of edible quality which is normally consumed whole should be used for preparation. Edible fish powder may be prepared from non-oily white fish like sprats (*Anchovilla* spp), perch, ribbon fish, dhara/dome, etc, either from a single species or their mixture.

**2.2** The fish need not be dressed but should be washed and cooked well for the preparation of the powder.

**2.3** Poisonous fish like marine snakes, clasmobranch fish with a high quantity of urea, oily fish and fish with black viscera are not considered suitable for the preparation of edible fish powder.

## 3. REQUIREMENT

**3.1 Description** — Edible fish powder shall be a fine powder free from needle-like bones. It shall blend easily with cereal flours. It shall have a faint yellow colour and the characteristic flavour and taste of dry fish. It shall be free from rancidity and off-flavours.

**3.1.1** No organic solvent or chemicals shall be used in its preparation.

**3.2 Particle Size** — Unless otherwise specified, the edible fish powder shall be of such fineness that it passes completely through a 100-mesh sieve [ see IS : 460 (Part II)-1978\* ].

**3.3** The edible fish powder shall comply with the requirements given in Table 1.

**3.4 Protein Efficiency Ratio (PER)** — The PER when determined by the method given in IS : 7481-1974† shall not be less than 2.5.

**3.5 Bacteriological Requirement** — The material shall also comply with the bacteriological requirements given in Table 2.

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\*Specification for test sieves: Part II Perforated plate test sieves ( *second revision* ).

†Method for determination of protein efficiency ratio (PER).



TABLE 1 REQUIREMENTS FOR EDIBLE FISH POWDER

( Clause 3.3 )

Sl No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO APPENDIX OF IS : 9808-1982*
(1)	(2)	(3)	(4)
i)	Moisture percent by mass, <i>Max</i>	10	A
ii)	Crude protein content ( $N \times 6.25$ ), on dry basis, percent by mass, <i>Min</i>	65	B
iii)	Total available lysine, g/100 g of protein, <i>Min</i>	6	C
iv)	Fat content, on dry basis, percent by mass, <i>Max</i>	6	D
v)	Ash, on dry basis, percent by mass, <i>Max</i>	18	E
vi)	Acid insoluble as, on dry basis, percent by mass, <i>Max</i>	0.5	F
vii)	Fluoride (as F), mg/kg, <i>Max</i>	250	G
viii)	Mercury, mg/kg, <i>Max</i>	0.5	H
ix)	Lead, mg/kg, <i>Max</i>	2.5	J

\*Specification for fish protein concentrate.

TABLE 2 BACTERIOLOGICAL REQUIREMENTS OF  
EDIBLE FISH POWDER

( Clause 3.5 )

Sl No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
(1)	(2)	(3)	(4)
i)	Total bacterial count, <i>Max</i>	15 000 per g	IS : 5402-1969*
ii)	<i>E. coli</i> and pathogenic organisms including <i>salmonella</i>	Nil	IS : 5887-1976 (Parts I and III)†

\*Method for plate count of bacteria in foodstuffs.

†Methods for detection of bacteria responsible for food poisoning:

Part I Isolation and identification of enteropathogenic *Escherichia coli* and the  
enumeration of *Escherichia coli*Part III Isolation and identification of *salmonella* and *shigella*.

## 4. PACKING AND MARKING

**4.1 Packing** — The edible fish powder shall be packed in clean, sound containers made of tinplate, PCRC sheets, cardboard paper or other material agreed to between the purchaser and vendor in such a way as to protect it from spillage, contamination, migration of moisture or air from the atmosphere, and seepage of fat into the material through the packing material. When packed in flexible material the packaging material should be capable of withstanding handling during transportation. The edible fish powder shall not come in direct contact with packaging material other than grease-proof or sulphate paper, cellulose paper or any other non-toxic packing material which may be covered with moisture-proof laminate or coated paper. When packed in metallic containers, the container shall be airtight and completely filled to have minimum air or the space shall be filled with inert gas, or the contents held in vacuum.

**4.2 Marking** — The following details shall be clearly marked on the container:

- a) Name, type and grade of the material;
- b) Name and address of manufacturer;
- c) Batch/Code number;
- d) Minimum net mass and gross mass;
- e) Date of manufacture; and
- f) Any other requirements under the Standards of Weights and Measures (Packaged Commodities) Rules, 1977.

**4.2.1** Each container may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 5. SAMPLING

**5.1** Representative samples of material for test and criteria for conformity shall be drawn according to the method prescribed in IS : 5315-1978\*.

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\*Methods of sampling for milled cereals and pulses products (*first revision*).

## 6. TESTS

**6.1** Tests shall be carried out as prescribed in 3.4 and col 4 of Tables 1 and 2 using pure chemicals and distilled water (see IS : 1070-1977\*).

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

## APPENDIX A

( Clause 0.5 )

### METHOD FOR THE PREPARATION OF EDIBLE FISH POWDER

#### A-1. RAW MATERIAL

**A.1.1** Edible fish powder can be prepared from lean white fish of pelagic type such as sprats (*Anchovilla* spp). It is very important to remove from the lot oily fish, such as sardine, fish with high urea content, and fish or sea animals, such as marine snakes which may impart toxicity, poison, smell or colour to the product. Only very fresh fish shall be used for the preparation.

#### A-2. PREPARATION OF PRESSED CAKE

**A-2.1** Raw miscellaneous fish received from the boat shall undergo preliminary sorting, and fatty fish like sardine, shark, cat fish and non-edible varieties are removed by hand picking. The material shall then be washed well, in a concrete washing tank lined inside with glazed tiles and fitted with false bottom and an outlet pipe, using potable water several times to remove sand, dirt, slime and other extraneous matter.

**A-2.2** The washed mass is transferred as such without dressing to a steam-jacketted stainless steel hemispherical kettle having a tilting arrangement, using sufficient quantity (1 : 1) of potable water to completely immerse the fish. The fish is then cooked at 100°C and boiled for 30 minutes under frequent agitation using a hand ladle till the whole mass is completely disintegrated. After cooking, the slurry is cooled and allowed to stand for some time to settle, so that the oil floats up. The oil-water mixture is decanted off by tilting the vessel. The operation is repeated once more. The solid mass is then taken in a nylon bag and pressed in a screw hydraulic press at a pressure of 5 kg/cm<sup>2</sup> to remove the maximum amount of water. The pressed cake so obtained is manually broken into small lumps.

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\*Specification for water for general laboratory use ( second revision ).

### **A-3. PRODUCTION OF DRY POWDER**

**A-3.1** The pressed mass is then dried on aluminium trays in a hot air tunnel drier at a temperature of 67-70°C to a final moisture level of 5 percent and below. The dried cake while hot is pulverised in a beater type pulveriser to a fine powder. The powder is sieved in a mechanical gravity-type sieving machine to 150-micron size and the oversized produce is pulverised once again, sieved and the final oversize which contains mainly bones, scales, etc, is discarded. The sieving machine shall have all its contact parts made of stainless steel and shall be fitted with two sieves (80 and 150 micron) in two decks, with an arrangement for continuous charging and for receiving products and oversize products continuously without stopping the machine. The product is tested chemically and bacteriologically. The edible fish powder is then packed (see 4.1).

( Continued from page 2 )

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# INDIAN STANDARDS

## ON

## NUTRITIOUS FOODS

IS :

- 3137-1974 High-protein mixes for use as food supplement (*first revision*)
- 4684-1975 Edible groundnut flour ( expeller pressed ) (*first revision*)
- 4874-1968 Edible cottonseed flour ( expeller pressed )
- 4875-1975 Edible groundnut flour ( solvent extracted ) (*first revision*)
- 4876-1968 Edible cottonseed flour ( solvent extracted )
- 6108-1971 Edible sesame flour ( solvent extracted )
- 6109-1971 Edible sesame flour ( expeller pressed )
- 7021-1973 Protein-rich food supplements for infants and pre-school children
- 7481-1974 Method for determination of protein efficiency ratio (PER)
- 7482-1974 Protein-based beverages
- 7487-1974 Protein-rich biscuits
- 7835-1975 Edible medium-fat soya flour
- 7836-1975 Edible low-fat soya flour
- 7837-1975 Edible full-fat soya flour
- 8211-1976 Edible soya protein isolate
- 8212-1976 Edible groundnut protein isolate
- 8220-1976 Protein rich concentrated nutrient supplementary foods
- 8222-1976 Edible leaf protein concentrate
- 8664-1977 Edible coconut flour ( expeller pressed )
- 8665-1977 Protein fortified bread
- 8676-1977 Edible coconut flour ( solvent extracted )
- 8677-1977 Edible sunflower seed flour ( solvent extracted )
- 8678-1977 Vegetable protein-based yoghurt ( vegetable curds )
- 9037-1979 Peanut butter
- 9038-1979 Reconstitutable protein beverage powder
- 9039-1979 Edible sunflower seed grits
- 9071 ( Part I )-1979 Code of practice for control of aflatoxin in groundnuts: Part I  
Harvesting, transport and storage of groundnut kernels.
- 9071 ( Part II )-1979 Code of practice for control of aflatoxin in groundnuts: Part II  
Plant storage and processing flour and oil
- 9095-1979 Protein chewy candy
- 9216-1979 Glossary of common terms relating to nutrition and nutritious foods
- 9487-1980 'Ready-to-eat' protein-rich-extruded foods
- 9488-1979 Edible coconut protein concentrates